

REMARKS

I. Introduction

Claims 1-15 and 24-31 are pending in the present application. In a March 24, 2004, Office Action ("Office Action"), Claims 1-15 and 24-31 were rejected under 35 U.S.C. § 103(a) as unpatentable over U.S. Patent No. 5,970,502 to Salkewicz et al. (hereinafter "Salkewicz et al."). For the following reasons, applicants respectfully submit that Claims 1-15 and 24-31 of the present application are not obvious over Salkewicz et al. because the cited and applied reference fails to teach or suggest a system and method for dynamically synchronizing a database stored on a server and client computer as claimed in the present application. While applicant strongly believes that the previously presented claims were clearly allowable in view of the cited and applied references, in order to advance the prosecution of this application, a variety of language changes and clarifications have been made in order to make the claim language more particularly point out and distinctly claim the subject matter that applicants regard as the invention. Pursuant to 37 C.F.R. § 1.111 and for the reasons set forth below, applicants respectfully request reconsideration and allowance of this application.

Before discussing more detailed reasons for applicants' belief that all the claims of the present application are allowable, a brief description of the present invention and the cited references is presented. The following discussion of the disclosed embodiments of applicants' invention and the teachings of the applied reference are not provided to define the scope or interpretation of any of applicants' claims. Instead, such discussed differences are provided to help the U.S. Patent and Trademark Office better appreciate important claim distinctions discussed thereafter.

A. Summary of the Present Invention

The present invention is directed to a method, system, and computer product for synchronizing a database that is either stored on a client computer, on a client computer and a server computer, or on a plurality of client computers and a server computer. Users are able to choose between different computer configurations for accessing and manipulating data in the database and using the database application. For example, a user may access the database application and modify the database from two or more client computers. In this instance, the database is permanently stored on the server computer so that client computers may obtain the most recent version of the database. Alternatively, a user may access the database application and modify the database only from a client computer. In this instance, permanent storage of the database on the server computer is not necessary.

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The method and system of the present invention also allows updates to databases while minimizing the amount of data transferred. More specifically, the present invention employs time relationships to reduce the amount of data transferred. An analysis of the time relationship is performed on data stored in databases to determine the type of download that is executed. For example, the server downloads a database file to the client, if the last access time of the client database is earlier than the creation time of the server database. Alternatively, the server selectively downloads individual data objects from the server database to the client database, if the last access time of the client database is not earlier than the creation time of the server database. In this way, the method and system of the present invention allow users to access and manipulate data stored in databases located on client and server computers while reducing the amount of data transferred during synchronization.

Another claimed aspect of the present invention provides a method for initializing duplicate databases. In one embodiment, the system deletes a server computer database if the server contains a database and if a user-generated command dictates that the server database be deleted. In addition, the system copies a client computer database to the server if the user-generated command dictates that the database be copied. This method prepares duplicate databases for a synchronization process, such as the synchronization process described above.

B. Summary of U.S. Patent No. 5,970,502 to Salkewicz et al.

Salkewicz et al. purportedly discloses a system and method for synchronizing databases. (Salkewicz et al., Col. 1, lines 7-10). More specifically, Salkewicz et al. discloses a system and method for synchronizing database copies existing on server computers connected to a network. Storing database copies on a plurality of servers distributes the load of network connections between multiple computers. However, when multiple copies of a database exist, data integrity is more difficult to maintain as redundant copies must be kept identical. To maintain data integrity, the distributed servers communicate with one another and exchange information regarding updates to the database. Also, distributed locking schemes are employed to provide a single server with access to records when modifications are necessary. (Salkewicz et al., Col. 1, lines 30-46.)

In one embodiment, Salkewicz et al. discloses a method of selectively updating a database copy on a remote server. In making updates, the source database is divided into a plurality of segments, which contain the last modification time processed for each record. The destination server receives the segments and compares the last modification time of the source database with the destination database. If the source database has a last modification time that is

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earlier than or equal to the time in the destination database, the received segment is ignored. If the source database has a last modification time that is later than the destination database, the record is updated.

II. Rejection of Claims 1-15 and 24-31 Under 35 U.S.C. § 103(a)

The Office Action rejected Claims 1-15 and 24-31 under 35 U.S.C. § 103(a) as being unpatentable over Salkewicz et al. The Office Action asserts that Salkewicz et al. discloses the majority of the elements of applicants' claims and that the non-disclosed element would have been obvious to a person of ordinary skill in the art at the time this invention was made. Applicants respectfully disagree. As described in more detail below, the cited reference fails to disclose or suggest certain elements of the independent and dependent claims. Applicants submit that it would not have been obvious to combine these elements with the teachings of Salkewicz et al. at the time the invention was made.

A. Claim 1 and 8

As amended, Claim 1 recites the following:

1. A method for dynamically synchronizing a duplicated database suitable for storage on both a server computer and a client computer, wherein the client computer database comprises a last server access time and a plurality of data objects and the server computer database comprises a creation time and a plurality of data objects, said method comprising:

downloading the server computer database to the client computer, if the client computer database last server access time indicates a time that is earlier than a time indicated by the creation time of the server computer database;

selectively downloading data objects stored in the server computer database to the client computer database, if the client computer database last server access time indicates a time that is not earlier than a time indicated by the creation time of the server computer database;

in response to receiving a user-generated command, configuring the database either for storage on the client computer or for storage on both the client computer and the server computer;

deleting the server computer database if the server computer contains a database and if the user-generated command dictates that the server computer database be deleted; and

copying the client computer database to the server computer, if the user-generated command dictates that the client computer database be copied to the server computer.

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The Office Action asserts that Salkewicz et al. discloses a method in a computer system for dynamically synchronizing a database stored on a server and a client computer. Further, the Office Action asserts that Salkewicz et al. teaches selectively downloading data objects stored on the server computer database to the client computer database if the client computer database last server access time indicates a time that is not earlier than a time indicated by the creation time of the server computer database. The Office Action admits that Salkewicz et al. does not specifically disclose "receiving a user-generated command for determining a database configuration." However, the Office Action asserts that receiving a user-generated command for determining a database configuration would have been obvious to a person of ordinary skill in the art at the time the invention was made because "database management has basic commands, such as (delete, update, copy, etc.) which provides database management manipulation." (Office Action at page 6.) The Office Action then asserts that Claim 1 is obvious in view of the teachings of Salkewicz et al. For the following reasons, applicants respectfully disagree.

As amended, Claim 1 recites "in response to receiving a user-generated command, configuring the database either for storage on the client computer or for storage on both the client computer and the server computer." A user of the present invention may choose between different configurations for accessing and manipulating a database. For example, a user may modify the database from two or more client computers. In this instance, the database is permanently stored on the server computer so that client computers may obtain the most recent version of the database. Alternatively, a user may modify the database from a single client computer. In this instance, permanent storage of the database on the server computer is not desirable because server computers connected to a network may be vulnerable to malicious computer users. Stated differently, storing a database on a server computer is a greater security concern because server computers must remain connected to a network to perform their functions. The present invention allows users to implement a database configuration that stores a database only on a client computer to minimize potential security threats.

In contrast to the language of Claim 1, Salkewicz et al. does not disclose a method where users are able to choose between different database storage configurations, including a configuration where the database is only stored on a client computer. The Office Action acknowledges that Salkewicz et al. does not disclose database synchronization between a server and client computer. However, the Office Action reasons that since a server computer may obtain services from other server computers, the definition of server computer in Salkewicz et al. includes a client computer. (Office Action at page 2.) However, storage of a database on a client computer is generally more secure than storage of a database on a server computer because

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server computers must remain connected to a network to perform their functions. The server computers described in Salkewicz et al. service other computers over a network resulting in a system where data is potentially available to malicious computer users who successfully "hack" the network. Conversely, the present invention allows users to choose between different database storage configurations, including a configuration where the database is only stored on a client computer. Thus, Salkewicz et al. does not disclose "in response to receiving a user-generated command, configuring the database either for storage on the client computer or for storage on both the client computer and the server computer."

Also in contrast to the language of Claim 1, Salkewicz et al. does not disclose a method for synchronizing a database that involves a selection between download techniques. As defined in Claim 1, applicants' claimed method is a combination that chooses between one of two different download techniques to synchronize databases in which the selection of the download technique is based on the state of a condition. More specifically, applicants' claimed method synchronizes duplicate databases by either (1) downloading a database to a client computer, or (2) selectively downloading data objects stored in the server computer database to the client computer database, depending on which of two possible states of a condition exist. In other words, the server downloads an entire database if one state exists, or selectively downloads individual objects if another state exists. The state of the condition that determines the type of download that is executed between the server and client is the result of a comparison between a "creation time" of the server database and an "access time" of the client database.

Conversely, Salkewicz et al. describes a database synchronization method between server computers where the "last modification" time stamp is used to determine if a segment will be transmitted between server computers. For instance, Salkewicz et al. states:

Rather than containing entire database records, the segments contain only 'instance identification' information, such as an instance number, sequence number, or other information indicating the **last modification** processed for the record. For example, a sequence stamp may indicate the date and time of the **last modification**.

[Salkewicz et al., Col. 10, lines 26-30 (emphasis added).] Although a time stamp comparison is involved, the Salkewicz et al. disclosure is limited to a method of analyzing a last modified time stamp to determine if a segment should be transmitted. Applicants respectfully submit that this action does not suggest a method of distinguishing between two options, namely, (1) "downloading the server computer database to the client computer" or (2) "selectively downloading data objects stored in the server computer database to the client computer"

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database" Stated differently, the Salkewicz et al. method of updating a segment only when a segment is modified does not suggest a method that employs one of two different types of download actions, depending on the state of a condition. Further, applicants submit that there is no basis for concluding that these elements would have been obvious to one of ordinary skill in the art at the time this invention was made in view of the teachings of Salkewicz et al.

For at least the above-mentioned reasons, applicants respectfully submit that the Office Action has not established a *prima facie* case of obviousness with respect to Claim 1 and respectfully request that the rejection of Claim 1 under 35 U.S.C § 103(a) be withdrawn and Claim 1 allowed.

Applicants respectfully submit that independent Claim 8 is also in condition for allowance. Like Claim 1, Claim 8 recites "in response to receiving a user-generated command, configuring the database either for storage on the client computer or for storage on both the client computer and the server computer." As mentioned above, Salkewicz et al. fails to disclose a database configuration where the database may be stored on a computer that is not permanently connected to a network. Also, like Claim 1, Claim 8 recites two different download actions including "selectively downloading data objects stored in the server computer database to the client computer database if the client computer database last server access time indicates a time that is not earlier than a time indicated by the creation time of the server computer database." As stated above, Salkewicz et al. fails to disclose a method that employs two different types of download actions, the choice of which depends on the state of a condition.

For at least the above-mentioned reasons, applicants respectfully submit that the Office Action has not established a *prima facie* case for a Section 103 rejection of Claim 8 and respectfully request that the rejection of Claim 8 be withdrawn and this claim allowed.

B. Claims 2-7 and 9-15

Since Claims 2-5 depend from Claim 1, and Claims 6 and 7 are, respectively, computer-readable medium and multiple dependent apparatus claims that depend from Claims 1-5, the analysis applied to Claim 1 also applies to these claims. Therefore, applicants respectfully submit that Claims 2-7 are in condition for allowance for the same reasons as Claim 1. Further, applicants submit that the dependent claims are patentable for additional reasons described below.

Since Claims 9-13 depend from Claim 8, and Claims 14-15 are, respectively, computer-readable medium and multiple dependent apparatus claims that depend from Claims 8-13, the analysis applied to Claim 8 also applies to these claims. Therefore, applicants

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respectfully submit that Claims 9-15 are in condition for allowance for the same reasons as Claim 8. Further, applicants submit that the dependent claims are patentable for additional reasons described below.

Claims 2 and 9 add the additional recitation of "updating the last server access time stored in the client computer database, wherein the updated last server access time corresponds to a clock time maintained by the server computer." The Office Action asserts that Salkewicz et al. teaches updating the last server access time stored in the client computer database, wherein the updated last server access time corresponds to a clock time maintained by the server computer. As discussed above, Salkewicz et al. teaches obtaining the last modification time processed for a record. Updating the last server access time as recited in Claims 2 and 9 is not equivalent to obtaining a last modification time as disclosed in Salkewicz et al. Accordingly, the cited reference fails to teach or suggest the additional element recited in Claims 2 and 9 and, thus, applicants assert that these claims are also allowable for this reason.

Claims 3 and 10 add the recitation of "transmitting, from the client computer to the server computer, the last server access time stored on the client computer database." The Office Action asserts that Salkewicz et al. teaches transmitting, from the client computer to the server computer, the last server access time stored on the client computer database. As discussed above, Salkewicz et al. teaches transmitting the last modification time processed for a record. Transmitting the last server access time as recited in Claims 3 and 10 is not equivalent to obtaining a last modification time as disclosed in Salkewicz et al. Accordingly, the cited reference fails to teach or suggest the additional element recited in Claims 3 and 10 and, thus, applicants assert that these claims are also allowable for this reason.

Claims 4 and 11 add the recitation of "determining if the last server access time of one data object stored in the server computer database indicates a time later than a time indicated by the client computer database last server access time." The Office Action asserts that Salkewicz et al. teaches determining if the last server access time of one data object stored in the server computer database indicates a time later than a time indicated by the client computer database last server access time. As discussed above, Salkewicz et al. teaches obtaining the last modification time processed for a record. Determining the last server access is not equivalent to obtaining a last modification time as disclosed in Salkewicz et al. Accordingly, the cited reference fails to teach or suggest the additional element recited in Claim 4 and 11 and, thus, these claims are submitted to be allowable for this additional reason.

With respect to Claims 5, 12, and 13, the cited reference does not disclose or suggest a method of "downloading the server computer database to the client computer, if the client

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computer database last server access time is not within a predetermined period of time from a clock time maintained by the server computer." The Salkewicz et al. disclosure is limited to a system and method that examines a last modification time stamp to determine if a segment should be transmitted. Applicants also respectfully submit that an examination of a time stamp does not suggest a method that is even related to a method that downloads a database if a time stamp is not within a "*time period*." Salkewicz et al. completely fails to describe or suggest a method that is even related to this claimed subject matter. Thus, Claims 5, 12, and 13 are submitted to also be allowable for this reason.

C. Claims 24-26

Claim 24 reads as follows:

24. A method for initializing a database system having one client computer and a server computer, comprising:
in response to receiving a user-generated command configuring the database either for storage on the client computer or for storage on both the client computer and the server computer;
determining if the server computer contains a database;
deleting the server computer database if the server computer contains a database and if the user-generated command dictates that the server computer database be deleted; and
copying a client computer database to the server computer, if the user-generated command dictates that the client computer database be copied to the server computer.

In contrast to the recitations of Claim 24, Salkewicz et al. does not receive user-generated commands or initiate different database configurations depending on the command issued. As described above with reference to Claim 1, the present invention synchronizes databases either stored on a plurality of client computers, on a client computer and a server computer, or on a plurality of client computers and a server computer. The choice between different configurations is determined by a user who may choose a configuration where the database is not permanently stored on the server computer. As described above, permanent storage of the database on a server computer may not be desirable due to the security concerns of always being connected to a network. The present invention allows users to initialize a database configuration that minimizes potential security threats.

Also as recited in Claim 24, applicants' claimed method is a combination that receives a user-generated command for determining a database configuration and deletes the server

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computer database if the user-generated command dictates that the server computer database be deleted and copies a client computer database to the server computer if the user-generated command dictates that the client computer database be copied to the server computer. The Office Action alleges that these claim elements are obvious because "'delete' and 'copy' are basic operational commands" that are disclosed in Salkewicz et al. (Office Action at page 4.) However, the Office Action fails to acknowledge that the claim recites a combination of elements, namely, (1) "deleting the server computer database if the server computer contains a database and if the user-generated command dictates that the server computer database be deleted" and (2) "copying a client computer database to the server computer, if the user-generated command dictates that the client computer database be copied to the server computer." While Salkewicz et al. discloses a system where data is copied and deleted, a combination of elements as recited in Claim 24 is not disclosed.

For at least the above-mentioned reasons, applicants respectfully submit that the Office Action has not established a *prima facie* case in support of the obviousness rejection of Claim 24. Applicants respectfully request that the rejection of Claim 24 be withdrawn and Claim 24 be allowed.

Since Claims 25 and 26 are computer-readable medium and apparatus claims having language that parallels the language of Claim 24, the analysis applied to Claim 24 also applies to these claims. Therefore, applicants respectfully submit that Claims 25-26 are in condition for allowance for the same reasons as Claim 24.

D. Claims 27-31

With regard to Claim 27, applicants respectfully submit that this claimed method is not taught or suggested by the cited reference. Claim 27 recites a combination of elements including "updating the entire client computer database with the server computer database if the synchronization data includes the server computer database; and updating selective client computer database data objects, if the synchronization data only includes corresponding selective server data objects." Salkewicz et al. does not disclose or suggest the alternative actions of (1) "updating the entire client computer database" and (2) "updating selective client computer database data objects," based on the nature of data being synchronized.

For at least the above-mentioned reasons, applicants respectfully submit that the Office Action has not established a *prima facie* case in support of a Section 103 rejection of Claim 27. Applicants respectfully request that the rejection of Claim 27 be withdrawn and Claim 27 be allowed.

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Since Claims 28-29 depend from Claim 27, and Claims 30-31 are computer-readable medium and multiple dependent apparatus claims that depend from Claims 27-29, the analysis applied to Claim 27 also applies to these claims. Therefore, applicants respectfully submit that Claims 28-31 are in condition for allowance for the same reasons as Claim 27. Further, applicants submit that the dependent claims are patentable for additional reasons described below.

Claim 28 adds the recitation of "receiving an updated last server access time from the server computer, wherein the updated last server access time corresponds to a clock time maintained by the server computer." The Office Action asserts that Salkewicz et al. teaches updating the last server access time stored in the client computer database, wherein the updated last server access time corresponds to a clock time maintained by the server computer. As discussed above, Salkewicz et al. teaches obtaining the last modification time processed for a record. Updating the last server access time is not equivalent to obtaining a last modification time as disclosed in Salkewicz et al. Accordingly, the cited reference fails to teach or suggest the additional element recited in Claim 28. Thus, applicants submit that Claim 28 is also allowable for this reason.

Claim 29 adds the recitation of "transmitting, from the client computer to the server computer, the last access time stored on the client computer database." The Office Action asserts that Salkewicz et al. teaches transmitting, from the client computer to the server computer, the last access time stored on the client computer database. As discussed above, Salkewicz et al. does not teach transmitting the last access time stored on the client computer database as claimed in the present application. Accordingly, the cited reference fails to teach or suggest the additional element recited in Claim 29. Thus, applicants submit that Claim 29 is also allowable for this reason.

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CONCLUSION

In view of the remarks above, applicants respectfully submit that the present application is in condition for allowance. Reconsideration and reexamination of the application and allowance of the claims at an early date are solicited. If the Examiner has any questions or comments concerning this matter, the Examiner is invited to contact the applicants' undersigned attorney at the number below.

Respectfully submitted,
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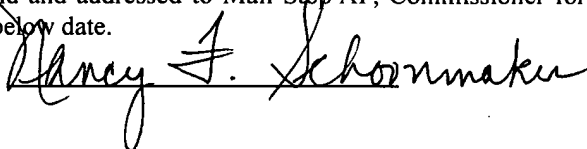


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